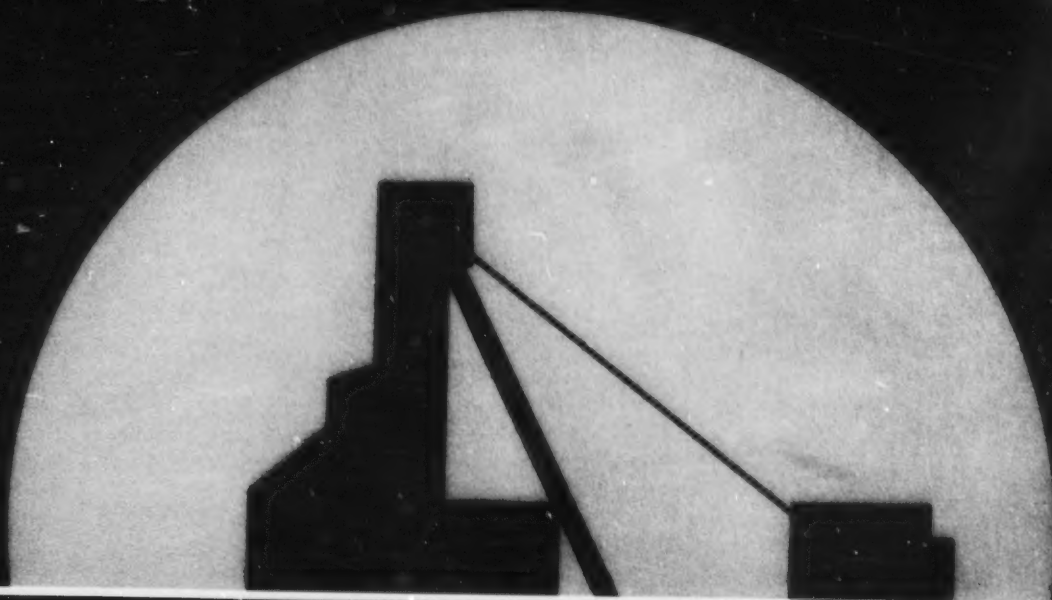


**Mines and Mineral
Activities 1987**



Canada

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Mines and Mineral Activities 1987

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Introduction

This report covers mines and mineral activities for the Yukon and Northwest Territories for the calendar year 1987.

The report was written and compiled by D.D. Brown and T.W. Caine of the Mining Resources Section, Ottawa. Sections on mineral exploration are based on exploration overviews produced by regional geological staff under the direction of S. Morison and J.G. Abbott in the Yukon and W.A. Padgham in the Northwest Territories.

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Summary

Northwest Territories

Mineral production in the Northwest Territories (N.W.T.) in 1987 was derived from eight mines, two of which closed during the first half of the year. The Salmita gold mine closed in mid-February and the Pine Point zinc-lead mine closed at the end of June, both because of ore depletion. Canada Tungsten's mine remained closed following suspension of production in mid-1986 because of continuing low tungsten prices.

The value of mineral production shipments was estimated at \$810 million in 1987 compared with \$668 million in the previous year. Much of the production value increase was due to higher metal prices and a substantial increase in zinc and lead production. Zinc and lead accounted for 69 per cent of total mineral production value, and higher output from the Pine Point and Polaris mines resulted in a 13 per cent increase in zinc and lead production from the previous year. Gold production accounted for 28 per cent of total mineral production value, but the closing of the Salmita Mine and other variances caused production to decrease about 6.5 per cent from the previous year.

The mineral industry accounted for 24.6 per cent of the zinc, 34.4 per cent of the lead, 10.0 per cent of the gold and 1.0 per cent of the silver produced in Canada during 1987. The value of these metals combined with byproduct antimony, bismuth and cadmium accounted for 7.2 per cent of Canada's metallic mineral production in 1987 compared with 7.3 per cent in 1986.

Operating mines and mills directly employed an average of 2 110 persons during 1987 compared with 2 406 persons in 1986.

Mineral exploration expenditures were estimated at \$65.5 million in 1987 compared with \$45 million in 1986. Most of the increase was attributable to flow-through share financing. Higher metal prices also stimulated investment.

Of 117 exploration projects conducted in 1987, 102 were directed to gold; the remainder to platinum, base metals, uranium and rare-earth elements.

Yukon

The value of mineral production from Yukon's three year-round mines and other seasonal operations continued to show a remarkable increase. In 1987, mineral production shipments were valued at \$447 million compared with \$176 million in 1986 and \$60 million in 1985. The leading producer, Curragh Resources' Faro Mine, achieved more than a threefold increase in zinc, lead and silver output during its second year of operation, which followed a three-year period of closure. Much of the remaining production increases came from Total Erickson Resources' Mount Skukum gold mine, also in its second year of operation and from the Yukon's numerous seasonal placer gold mining operations. All of the industry was stimulated by higher metal prices.

Gold exploration, supported by flow-through share financing, was again the driving force in mineral exploration and development activity. At year end, development work on Canamax Resources Inc. and Pacific Trans-Ocean Resources Ltd.'s Ketza River gold property was progressing toward a mid-1988 startup. Also, exploration and development work on Omni Resources Inc.'s Skukum Creek property yielded encouraging results and a tonnage/grade combination that could support mine production.

The Yukon's lode (hard-rock) mining industry employed an average of 894 persons directly in 1987 compared with 799 persons a year earlier. In addition, the Yukon placer mining industry employed an estimated 700 persons at approximately 200 operations on a seasonal basis.

The Yukon accounted for 25.7 per cent of the lead, 11.6 per cent of the zinc, 0.5 per cent of the gold and 10.6 per cent of the silver produced in Canada during the year. Also, the Yukon accounted for 4.0 per cent of the value of Canada's metallic mineral production in 1987 compared with 1.8 per cent in 1986.

Mineral exploration expenditures in the Yukon Territory were estimated at \$40 million in 1987 compared with \$27.9 million a year earlier. Much of the increase was attributed to active flow-through share financing. Higher metal prices also encouraged investment. Almost all of the exploration work was directed to precious metals in established exploration areas and much of the work was on known mineral occurrences/deposits.

Territoires du Nord-Ouest

Au cours de l'année civile 1987, la production de minéraux dans les Territoires du Nord-Ouest provenait de huit mines, dont deux ont cessé leurs activités au cours du premier semestre de l'année. La mine d'or Salmita a été fermée à la mi-février et la production de zinc et de plomb à la mine de Pine Point a cessé à la fin de juin, en raison, dans les deux cas, de l'épuisement des réserves de minerai. La mine de la Canada Tungsten est demeurée fermée, par suite de l'arrêt de la production survenu au milieu de 1986, du fait de la stagnation des prix du tungstène.

La valeur des expéditions de minéraux en provenance des Territoires du Nord-Ouest a été évaluée à 810 millions de dollars en 1987, comparative-ment à 668 millions l'année précédente. Cette progression est due en grande partie à l'augmentation des prix des métaux et à un accroissement considérable de la production de zinc et de plomb. Ces deux derniers métaux représentent 69 p. 100 de la valeur de la production totale de minéraux, et un rendement accru des mines de Pine Point et Polaris a entraîné une augmentation de 13 p. 100 de la production de plomb et de zinc par rapport à l'année précédente. L'or représentait 28 p. 100 de la valeur totale de la production de minéraux, mais la fermeture de la mine Salmita et d'autres variables sont à l'origine d'une baisse de production de 6,5 p. 100 par rapport à 1986.

L'industrie minière des Territoires du Nord-Ouest a fourni 24,6 p. 100 du zinc produit au Canada en 1987, ainsi que 34,4 p. 100 du plomb, 10 p. 100 de l'or et 1,0 p. 100 de l'argent. La valeur de ces métaux, à laquelle il faut ajouter celle des dérivés que constituent l'antimoine, le bismuth et le cadmium, représente 7,2 p. 100 de la production canadienne de minéraux métalliques en 1987, comparativement à 7,3 p. 100 en 1986.

Les mines et les usines métallurgiques dans les Territoires du Nord-Ouest ont employé, dans des emplois directs, en moyenne 2 110 travailleurs en 1987, comparativement à 2 406 en 1986.

Les dépenses relatives à l'exploration minière dans les Territoires du Nord-Ouest ont été estimées à 65,5 millions de dollars en 1987, alors qu'elles étaient de 45 millions l'année précédente. Cet accroissement est en grande partie attribuable

au financement par émission d'actions donnant droit à des dégrèvements d'impôt. Une hausse des prix des métaux a également favorisé les investissements.

Des 117 programmes de prospection menés dans les Territoires du Nord-Ouest en 1987, 102 visaient à trouver de l'or, tandis que les autres avaient trait au platine, aux métaux communs, à l'uranium et aux métaux rares.

Yukon

La valeur de la production de minéraux du Yukon, laquelle production provient de trois mines exploitées à l'année et d'autres sites dont l'exploitation est saisonnière, a continué à montrer une croissance remarquable. En 1987, les expéditions de minéraux étaient évaluées à 447 millions de dollars, comparativement à 176 millions en 1986 et 60 millions en 1985. Le premier producteur, la mine Faro de la Curragh Resources a plus que triplé sa production de zinc, de plomb et d'argent au cours de sa deuxième année d'exploitation, après une période d'inactivité de trois ans. Une large part du restant de l'augmentation de la production a été tirée de la mine d'or Mount Skukum de Total Erickson Resources, elle aussi dans sa seconde année d'exploration, et des nombreux sites saisonniers d'exploitation des alluvions aurifères que compte le Yukon. L'ensemble de l'industrie a été stimulé par une hausse des prix des métaux.

La prospection de l'or, soutenue par le financement par émission d'actions donnant droit à des dégrèvements d'impôt, a été à nouveau l'élément moteur de l'exploration et de la mise en valeur des concessions minières. À la fin de l'année, les travaux de mise en valeur effectués par la Canamax Resources Inc. et la Pacific Trans-Ocean Resources Ltd. sur leur propriété aurifère de la rivière Ketza laissaient prévoir l'ouverture de la mine vers le milieu de 1988. En outre, les travaux de prospection et de mise en valeur, effectués par Omni Resource Inc. sur sa propriété du ruisseau Skukum ont donné des résultats encourageants et révélé une teneur en minerai de bonne valeur qui pourrait permettre l'exploitation du gisement.

L'industrie minière souterraine du Yukon a donné des emplois directs à 894 personnes, en moyenne, en 1987, comparativement à 799 personnes l'année précédente. De plus, l'industrie des sites aurifères

de surface a fourni de l'emploi à environ 700 personnes, réparties dans environ 200 sites, sur une base saisonnière.

Le Yukon a fourni, 25,7 p. 100 du plomb, 11,6 p. 100 du zinc, 0,5 p. 100 de l'or et 10,6 p. 100 de l'argent produits au Canada au cours de l'année. En outre, 4,0 p. 100 de la valeur des minéraux métalliques produits au Canada en 1987 provient du Yukon, comparativement à 1,8 p. 100 l'année précédente.

Les dépenses relatives à la prospection minière dans le territoire du Yukon étaient estimées à 40 millions de dollars en 1987 et à 27,9 millions un an plus tôt. Cet accroissement est dû en grande partie au financement par émission d'actions donnant droit au dégrèvement d'impôt. Une hausse des prix des métaux a également favorisé les investissements. Presque tous les travaux de prospection visaient à trouver des métaux précieux dans des gîtes de prospection bien établis, et une grande partie des travaux ont porté sur des gisements dont l'importance est connue.

Mines and Mineral Activities

Yukon

Mineral Production

The value of mineral production from Yukon's three year-round mines and seasonal operations continued to show a remarkable increase. In 1987 mineral production shipments were valued at \$447 million compared with \$176 million in 1986 and \$60 million in 1985. The leading producer, Curragh Resources' Faro Mine achieved more than a threefold increase in zinc, lead and silver output during its second year of operation which followed a three-year period of closure. Much of the remaining production increases came from Total Erickson Resources' Mount Skukum gold mine, also in its second year of operation and from the Yukon's numerous seasonal placer gold mining operations. All of the industry was stimulated by higher metal prices.

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Mines

Curragh Resources Corp., Faro Mine

The Faro mine (b)* reached a full production rate of 13 500 tpd of ore. The Faro mill processed 4 539 394 t of ore to recover 184 727 t of zinc, 121 539 t of lead, and 109 202 kg of silver and 384.4 kg of gold in zinc and lead concentrates. All of the ore processed was from the Faro open pit mine. Because the Faro deposit will be exhausted within four years, the company is conducting early development work on the Vangorda and Grum deposits 14 to 16 km southeast of the Faro mill complex. The Grum, with reserves of about 40 million t grading 9 per cent combined zinc-lead, is slated for production as the Faro Mine is phased out.

Type:	Open pit
Location:	13 km north of Faro
Product:	Zinc, lead, silver
Mill Capacity:	13 500 tpd
Tonnes Milled:	4 539 394 t
Reserves:	15 million t (December 31, 1987)
Reserve Grade:	3.37% lead, 4.69% zinc, 45 g/t silver
Employees:	475

Total Erickson Resources Ltd., Mount Skukum Mine

The Mount Skukum gold mine (d) is operated by Mount Skukum Gold Mining Corporation (a totally-owned subsidiary of Total Erickson Resources), which owns 37 per cent of the mine. AGIP Canada Ltd. owns the remaining 63 per cent interest in the mine.

In 1987, the Mount Skukum mill processed 97 031 t of ore grading 15.39 g/t of gold that was mined underground in the Main zone vein. Recovery amounted to 1 378.5 kg of gold and 1 067 kg of silver. A development adit was driven to the Brandy and Lake zone veins, which have combined reserves of 94 990 t grading 16 g/t of gold. Extensive exploration was conducted on the property to prove new reserves.

* Numbers or letters in parenthesis indicate the location of the property on the map near the centrefold.

Type:	Underground
Location:	90 km southwest of Whitehorse
Product:	Gold, silver
Mill Capacity:	270 tpd
Tonnes Milled:	97 031 t
Reserves:	202 392 t (February 1988)
Reserve Grade:	10.66 g/t gold (cut)
Employees:	90

Table 1:
Mineral Production of Operating Mines in the Yukon, 1985, 1986 and 1987 and Employment, 1987

Company, Mine and Commodity	1985		1986		1987(P)		Number of Employees
	t	kg	t	kg	t	kg	
<i>Curragh Resources Corp.</i>							
Faro Mine							
zinc	-		62 951		226 266		475
lead	-		38 204		149 285		
silver		-		42 753		177 025	
<i>Dawson Eldorado Mines Ltd.</i>							
Plata-Inca							10
silver		9 330		1 244		857	
lead	1 360		N/A		48.4		
zinc	N/A		N/A		4.6		
<i>Nadahini Mining Corporation</i>							
Whiskey Lake							8
coal	-		17 233		20 000		
<i>Total Erickson Resources Ltd.</i>							
Mount Skukum							
gold		-		933		1 379	90
silver		-		715		1 068	
<i>United Keno Hill Mines Ltd.</i>							
Elsa area mines							196
silver		39 585		53 187		46 437	
lead	975		1 355		1 605		
zinc	-		66		385		
<i>Whitehorse Coal Corporation</i>							
coal	-		1 800		-		-
TOTAL							779

Source:
Department of Indian Affairs and Northern Development. These figures are those reported by the mines as production and will not match Statistics Canada's production figures which are based on metals sold or shipped.

N/A Not available

(P) Preliminary

- Nil

United Keno Hill Mines Limited, Elsa Area Mines

In 1987, United Keno Hill Mines (a) extracted silver ore from six underground mines and five open-pit mines. Although the tonnage milled was up seven per cent to 78 833 t, production of silver in concentrate was down 15 per cent to 46 437 kg compared with 1986. The drop in silver production was due to a decrease in mill head grade from the previous year. During the year, shaft sinking was in progress to develop an ore zone in the Husky Southwest Mine and exploration adits and ramps were driven in other mine areas. Considerable exploration and development was conducted to increase ore reserves.

Type:	Underground and open pit
Location:	Keno Hill - Galena Hill areas, near Elsa
Product:	Silver
Mill Capacity:	450 tpd
Tonnes Milled:	78 833 t
Reserves:	172 455 t (December 31, 1987)
Reserve Grade:	1 042 g/t silver, 5.4% lead
Employees:	196

Small Seasonal Mine Operations

Dawson Eldorado Mines Ltd., Plata-Inca Mine

In 1987, the company mined 114 t of direct-shipment, silver-lead ore averaging approximately 6 900 g/t of silver from the Plata P-6 and Plata P-4 veins on the Plata-Inca property (c). Shipments amounted to 747 kg of silver, 48.4 t of lead, 4.6 t of zinc and 670 g of gold. Since 1987, the company has mined the property during the summer months and has transported the ore by air from the property to Ross River, 130 km to the south for shipment by truck to smelter.

Nadahini Mining Corporation, Whiskey Lake Mine

The company mined the small open-pit Whiskey Lake coal property (e), located west of Ross River, under an agreement with Curragh Resources Corp. to provide the Faro mill with thermal coal. The coal is used to feed the zinc-lead concentrate drier at the Faro mill. In 1987, Nadahini produced approximately 20 000 t of bituminous coal.

Placer Mining

Placer mine gold production in the Yukon Territory, based on royalty payments, amounted to 4 136 kg of raw gold or approximately 3 300 kg of fine gold compared with 2 878 kg of fine gold a year previously. This was the highest annual production on record since 1917. The value of this production is estimated at \$64.3 million. About 200 operations were active and all of the traditional mining areas produced during the year. Most of the production came from the Klondike (3), Indian River (4) and Sixtymile River (2) areas.

Among the larger producers, Queenstake Resources Ltd. operated a dredge on Clear Creek (5) and bulldozer-trommel-sluice box operations on Maisy May and Black Hills creeks (4). The dredging operation, the last of its kind in the Yukon, was closed down permanently at the end of the operating season because it proved to be uneconomical. Recovery from the three operations amounted to 148.5 kg of fine gold.

Granville Joint Venture operated by Teck Corporation began production on Gold Creek in the Klondike area (3) and sluiced 101 700 cubic m of pay gravel to recover 208.2 kg of crude gold.

Underground mines were worked during the 1986/87 winter season. White Channel Underground Mining Ltd. mined 65 000 bank cubic m of pay gravel at Jackson Hill in the Klondike area (3). Klondike Underground Mining at Miller Creek in the Sixtymile area (2) spent part of the 1986/87 winter driving a new adit. The company mined 5 000 cubic m of pay gravel and waste. A third underground operator, Miben Mining, on the south side of Dago Hill, in the Klondike area (3), mined 126 000 cubic m of pay gravel.

At the close of 1987, there were 15 123 placer claims in good standing compared with 14 701 in 1986. There were also 409 placer leases to prospect in good standing compared with 225 in 1986. A total of 1 855 new placer claims were staked and 363 new placer leases were staked during 1987.

Development

Major development was conducted on the Ketzá River gold property (24) of Canamax Resources Inc. and Pacific Trans-Ocean Resources Ltd. in preparation for initial mine production in 1988. Also, Omni Resources Inc. advanced its exploration/development program on its Skukum Creek gold property (d) in an effort to bring the project to mine-feasibility and production-decision stages.

Ketzá Project

At year-end, construction of a 320 tpd mill on the Ketzá property was proceeding for completion in early 1988 and initial production before mid-1988. Since 1984, the joint venture developers, Canamax and Pacific Trans-Ocean have invested some \$24.5 million in the project. The mine is expected to produce 1 550 kg of gold annually, create 109 new jobs and extend over a mine life of 4.5 years based on year-end 1987 reserves. Reserves of oxide-type gold ore amount to 454 000 t averaging 18 g/t of gold in the Peel and Ridge zones and a possible 75 000 t averaging 13 g/t of gold in the Break zone.

Skukum Creek Project

Omni Resources Inc. conducted a \$2-million exploration/development program on its Skukum Creek property (d) in the Mount Skukum area. Exploration work included 869 m of lateral workings on the 1 300 m level, underground and surface drilling and bulk sampling. Preliminary metallurgical tests yielded encouraging results. At year end 1987, drill proven reserves of the Rainbow vein and nearby Kuhn vein amounted to 745 000 t grading 7.71 g/t of gold and 387.2 g/t of silver. The company will continue underground development and bulk sampling through the winter of 1987/1988 as part of feasibility study work. A decision on mine production is expected in 1988.

Mineral Exploration

Mineral exploration expenditures in the Yukon Territory were estimated at \$40 million in 1987 compared with \$27.9 million a year earlier. Much of the increase was attributed to active flow-through share financing. Higher metal prices also encouraged investment. Almost all of the exploration work was directed to precious metals in established exploration areas and much of the work was on known mineral occurrences/deposits.

Table 2
Quartz Claims Recorded in Yukon, 1986 and 1987

Mining District	Claims Recorded 1986	Claims Recorded 1987
Whitehorse	2 494	6 002
Dawson	568	2 464
Mayo	310	558
Watson Lake	2 644	3 544
Total	6 016	12 568

Exploration Projects

Wheaton River - Montana Mountain Areas

Exploration in the area continued to be active and directed to epithermal gold- and silver-bearing quartz carbonate veins and breccias associated with Cretaceous and early Tertiary volcanic and related intrusive rocks.

Omni Resources Inc. increased the reserves on its Skukum Creek property (d) to 745 000 t grading 7.7 g/t of gold and 307.2 g/t of silver by both surface and underground drilling and underground development on the Rainbow and Kuhn zones (see Development).

Total Erickson Resources Ltd., in joint venture with AGIP Canada Ltd., conducted a \$2.3 million exploration program on their Mt. Skukum Mine property (d) and increased the drill indicated reserves in the Brandy and Lake zones. Some 7 800 m of drilling were completed and various geophysical surveys outlined exploration targets for the 1988 program.

At least 13 other projects in the district were conducted by Omni Resources Inc., Berglynn Resources Ltd., United Keno Hill Mines Ltd., All-North Resources Ltd., Kerr Addison Mines Ltd., Pacific Trans-Ocean Resources Ltd. and Sirius Resources Ltd.

Dawson Range

Exploration for gold and silver veins was active in the Dawson Range with five drill programs and extensive trenching near Mt. Nansen, on Mt. Freegold and along Big Creek (12). Chevron Minerals Ltd. and BYG Natural Resources Ltd. drilled 17 holes totalling 1 048 m on the Flex and Webber zones on the Mt. Nansen property (13). On the nearby Brown-McDade zones, geological reserves amount to 727 000 t of oxidized material grading 7.9 g/t of gold and 62 to 103 g/t of silver. A new gold-silver bearing zone, named the Dickson, was identified during the year between the Brown-McDade zone and the Flex zone.

Also in the Mt. Nansen area, Chesbar Resources Inc. and States Exploration Ltd. reported a drill intersection of 14.7 g/t of gold over 1.6 m from the VIC property (13), optioned from Kerr Addison Mines Ltd. Approximately 1 219 m of drilling were completed.

Aurchem Exploration Ltd. drilled approximately 1 524 m on the Goulter property (13) where gold-bearing quartz veins cut Cretaceous intrusives and metamorphic rocks.

On Mt. Freegold, Nordac Mining Corp. trenched the ANTONIUK and GOLDSTAR properties (12). On the GOLDSTAR property, a trench on the Margarete vein was reported to yield assays of 9.77 g/t of gold and 96.0 g/t of silver. Also, near Mt. Freegold, Noranda Exploration Co. Ltd. trenched and drilled 185 m on the EMMON'S HILL property (12). The company also trenched over 252 m on the PINESOL property (12), optioned from G. Lee. Dominion Explorers trenched the GOLDY occurrence (12). Shawkak Exploration Company Limited drilled the faulted extension of the LAFORMA vein (12).

Along the west side of Big Creek, Nordac Mining Corp. conducted extensive bulldozer trenching on the REVENUE and NUCLEUS properties (12). Values of 1.6 g/t of gold over 70 m were obtained in one trench northwest of Big Creek. Noranda Exploration Co. Ltd. conducted a VLF-EM survey, drilling and bulldozer trenching on the TAD property (10).

Klondike District

In the Klondike gold fields, near Dawson, gold-bearing quartz veins in the Klondike Schist were the target of exploration along Bonanza and Hunker creeks.

Mark Management explored the LONE STAR property (3) by completing approximately 9 296 m of rotary and diamond drilling, bulldozer trenching and extensive sampling. United Keno Hill Mines Ltd. explored a zone on the HUNK property (4), by resampling the BEN LEVY adit, conducting geophysical and geochemical surveys and bulldozer trenching. Trenching on one of the geochemical anomalies exposed en echelon quartz veins. Values of up to 29.5 g/t of gold over 4 m were reported from this zone. A total of 25 discrete veins were identified with samples averaging 3 to 15.5 g/t of gold.

Ketza-Seagull District

Gold and silver occur in sulphide-oxide replacement deposits in limestone and dolomite and in fissure veins and breccia zones. The deposits are zoned about two domal uplifts namely the Ketza and Seagull uplifts.

In the Ketza Uplift, Canamax Resources Ltd. and Pacific Trans-Ocean Resources Ltd. carried out extensive geophysical surveys, detailed geochemical surveys and 10 021 m of drilling over nine gold-silver mineralized zones on their jointly-held Ketza River property (24) and other properties in the area. Several new oxide and sulphide showings were discovered. The drill program encountered high-grade mineralization from an oxidized unit in the Knoll zone. On the Gully and QB zones, oxide reserves of 64 950 t grading 9.6 g/t of gold were identified. The reserves of the Break zone and the main deposits of the Ketza River Property, the Peel and Ridge zones, are given in this report under "Development".

Other companies active in the Ketza Uplift area were Golden Pavilion Resources Ltd. (SONNY property) and Mountain Province Mining Inc. (WHITE, EROS properties).

In the Seagull Uplift area (23), Fairfield Minerals Ltd. conducted geophysical surveys for gold on the RAM property and Yukon Minerals Corp. trenched small high-grade silver veins at the head of Groundhog Creek. Cominco Ltd. also drilled 11 holes totalling 961 m on the TAY(LP) property.

Keno Hill District

United Keno Hill Mines Ltd. tested seven target areas on its mine property (a) by drilling 185 rotary-percussion overburden holes totalling 8 113 m. Exploration adits and drifts and raises were driven on the Bellekeno, Lucky Queen, Silver Queen, Ruby and Husky veins. Underground drilling on the Bellekeno and Silver King exploration adits amounted to 846 m. A significant new deposit was identified in the Bellekeno Mine.

Northeast of Keno Hill, on the CLARK property (7), Archer Cathro and Associates (1981) Ltd. working for NDU Resources Ltd., drilled a silver-lead-zinc bearing mantos deposit. Mineralization, in five of the six holes drilled, averaged 273 g/t of silver, 6.5 per cent lead and 9.3 per cent zinc over 1.8 m.

Hess River Area

Dawson Eldorado Mines Ltd. and Pacific Trans-Ocean Resources Ltd. drilled 15 holes on the PLATA P-4 vein (c) and outlined possible geological reserves of 450 000 t of silver-gold mineralization at depths of less than 60 m.

Southeast Yukon

Northeast of Watson Lake, seven holes totalling 2 012 m were drilled by Novamin Resources Inc. to increase the geological reserves of the MEL barite-zinc-lead deposit (32) to 5.58 million t grading 6.63 per cent zinc, 1.92 per cent lead and 49.6 per cent barite.

At its Mt. Hundere property (30), Canamax Resources Inc. drilled 14 holes totalling 3 890 m and increased the tonnage and grade of the zinc-lead-silver resources. A new zone containing some 500 000 t of inferred reserves was located 500 m northeast of the south showing, where 2.2 million t grading 14.1 per cent zinc, 8.7 per cent lead and 72 g/t of silver had been indicated at the beginning of the year. So far, five significant mineralized zones have been discovered by Canamax.

Near Quartz Lake, Novamin Resources Inc. and NDU Resources Ltd., under an option agreement with Silverquest Resources Ltd., trenched gold geochemical anomalies on the PORKER property (31). One oxidized zone returned assays as high as 4.1 g/t gold over 6.1 m.

Rancheria District

Silver-bearing veins and mantos deposits are associated with northeast-trenching faults and early Tertiary dykes in the district. On the LOGAN property (28), a fault zone cuts a highly altered Cretaceous intrusion and contains mineralized veins and breccia zones. Fairfield Minerals Ltd. and Getty Resources Ltd. completed a 44-hole, 7 620-m drill program, to further define the Main zinc-zinc-silver deposit. Reserves were increased substantially and were estimated at 13.97 million t grading 5.13 per cent zinc and 20.2 g/t of silver.

Silver Hart Mines Ltd. continued drilling from the previous year on the TM zone on the CMC (Hart) property (26). The company increased its geological reserves to 97 000 t grading 1 025 g/t of silver.

Pak-Man Resources Ltd. and 2001 Resources Industries Ltd. trenched several prospects in Rancheria District (27).

Tintina Trench

Near Ross River, Golden Nevada Resources Inc. and Noranda Exploration Company conducted geochemical and airborne geophysical and airborne geophysical surveys over the Grew Creek property (18), in search for epithermal gold-bearing deposits, which cut Tertiary volcanic rocks on the property. The Main deposit, which had previously been explored by drilling, was retested by diamond drilling. The best hole, Hole No. 30, intersected 31.5 m grading 11.66 g/t of gold and 150.9 g/t of silver.

Kluane Ranges

The Kluane Joint Venture, comprised of All North Resources Ltd., Galactic Resources Ltd. and Chevron Minerals Ltd. continued exploration on the WELLGREEN (QUILL) mine property (35). The property was under option from Hudson-Yukon Mining Corp. Bulldozer trenching, geophysical surveying and 4 932 m of diamond drilling in 45 holes showed a widespread but erratic distribution of platinum-palladium-copper-nickel-cobalt values. The platinum-bearing disseminated and massive sulphide mineralization are associated with a mafic-ultramafic Triassic differentiated sill and adjacent footwall rocks.

Rockridge Mining Corp., Chevron Minerals Ltd. and All North Resources Ltd. conducted a geophysical survey and completed 603 m of drilling to test the contact of an ultramafic sill on the CANALASK property (36). No significant mineralization was reported. Similar ultramafic sills were explored for platinum group metals in the area by Silverquest Resources on the WALSH property (36), by 2001 Resources and Rockridge Mining on the LINDA (KLU) property (35), by Rockridge Mining Corp. on the DUKE property (34) and by Pak-Man Resources and Rockridge Mining on the AIRWAYS property (16).

YUKON MINERAL EXPLORATION AND MINING - 1987

LEGEND

 Producing Hardrock Mine

- a United Keno Hill Mines Ltd., Ag, Pb, Zn, Cd
Dawson Eldorado Mines Ltd., Ag, Pb
Springmount Operating Co. Ltd., Ag, Pb
- b Curragh Resources Corp., Pb, Zn, Ag
- c Dawson Eldorado Mines Ltd., Ag, Pb
- d Total Erickson Resources Ltd., Au
- e Nadahini Mining Corp., Coal

 Areas of Mineral Exploration Activity
Refer to Yukon Table and Text

-  LEAD-ZINC-SILVER
-  PLATINUM
-  GOLD, SILVER
-  COAL

ROAD

80km 0 80km

Arctic Ocean

Inuvik

N.W.T.

YUKON

ALASKA

Dawson

Mayo

Yukon River

Carmacks

Ross River

Whitehorse

Watson Lake

BRITISH COLUMBIA

60°
140°

135°

130°

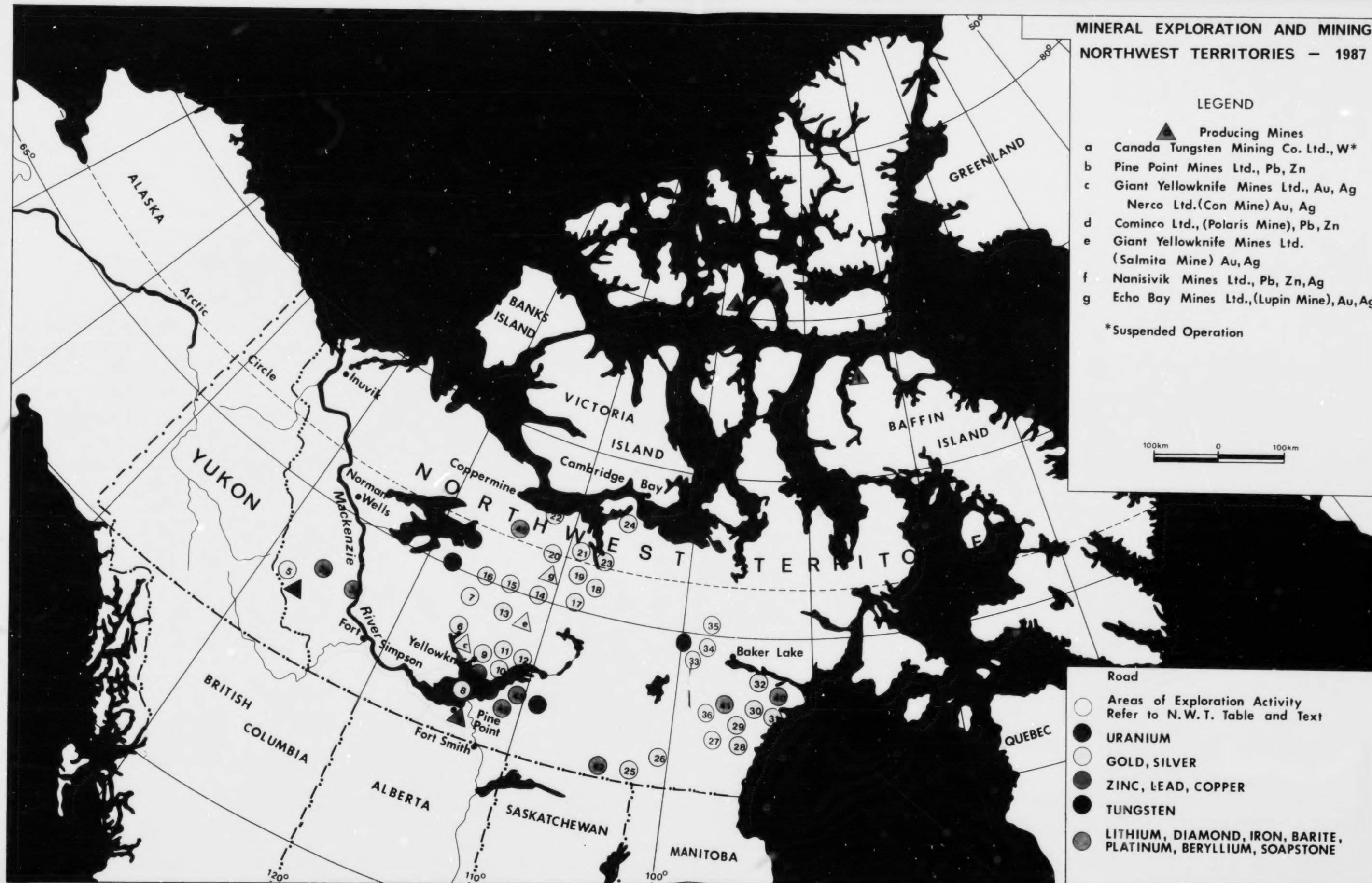
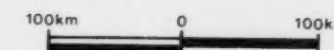
125°

MINERAL EXPLORATION AND MINING NORTHWEST TERRITORIES - 1987

LEGEND

-  Producing Mines
- a Canada Tungsten Mining Co. Ltd., W*
 - b Pine Point Mines Ltd., Pb, Zn
 - c Giant Yellowknife Mines Ltd., Au, Ag
Nerco Ltd. (Con Mine) Au, Ag
 - d Cominco Ltd., (Polaris Mine), Pb, Zn
 - e Giant Yellowknife Mines Ltd.
(Salmita Mine) Au, Ag
 - f Nanisivik Mines Ltd., Pb, Zn, Ag
 - g Echo Bay Mines Ltd., (Lupin Mine), Au, Ag

*Suspended Operation



Road

-  Areas of Exploration Activity
Refer to N.W.T. Table and Text
-  URANIUM
-  GOLD, SILVER
-  ZINC, LEAD, COPPER
-  TUNGSTEN
-  LITHIUM, DIAMOND, IRON, BARITE,
PLATINUM, BERYLLIUM, SOAPSTONE

Mines and Mineral Activities

Northwest Territories

Mineral Production

Mineral production in the Northwest Territories in 1987 was derived from eight mines, two of which closed during the first half of the year. The Salmitya gold mine closed in mid-February and the Pine Point zinc-lead mine closed at the end of June, both because of ore depletion. Canada Tungsten's mine remained closed following suspension of production in mid-1986 because of continuing low tungsten prices.

The value of mineral production shipments in the N.W.T. was estimated at \$810 million in 1987 compared with \$668 million in the previous year. Much of the production value increase was due to higher metal prices and a substantial increase in zinc and lead production. Zinc and lead accounted for 69 per cent of total mineral production value. Higher output from the Pine Point and Polaris mines resulted in a 13 per cent increase in zinc and lead production from the previous year. Gold production accounted for 28 per cent of total mineral production value, but the closing of the Salmitya Mine and other variances caused production to decrease about 6.5 per cent from the previous year.

The mineral industry in the N.W.T. accounted for 24.6 per cent of the zinc, 34.4 per cent of the lead, 10.0 per cent of the gold and 1.0 per cent of the silver produced in Canada during 1987. The value of these metals combined with byproduct antimony, bismuth and cadmium accounted for 7.2 per cent of Canada's metallic mineral production in 1987 compared with 7.3 per cent in 1986.

Operating mines and mills in the N.W.T. directly employed an average of 2 110 persons during 1987 compared with 2 406 persons in 1986.

Mines

Canada Tungsten Mining Corporation Limited, Cantung Mine

Canada Tungsten owns the western world's largest tungsten operation, the Cantung Mine, at Tungsten, N.W.T. (a)*. The mine remained on a care and maintenance basis throughout the year as world tungsten prices were too low for its economic operation.

Cominco Ltd., Polaris Mine

In 1987, the mill of the Polaris Mine (d) treated a record 983 800 t grading 13.6 per cent zinc and 3 per cent lead to produce 206 100 t of zinc concentrate and 33 600 t of lead concentrate. The metal contained in the concentrate amounted to approximately 131 000 t of zinc and 27 000 t of lead.

Although ice conditions were difficult during much of the marine navigation season, particularly between Resolute and the Polaris Mine, 14 ship-loads were required to carry the bulk concentrates to markets. Recognition of probable ore losses in stope pillars resulted in a downward adjustment of reserves from the previous year.

Type:	Underground
Location:	The Polaris Mine is on Little Cornwallis Island, 100 km north-west of Resolute.
Product:	Zinc, lead
Mill Capacity:	2 100 tpd
Tonnes Milled:	983 800 t
Reserves:	15.059 million t (December 31, 1987)
Grade:	14.4% zinc and 3.9% lead
Employees:	261

* Numbers or letters in parentheses indicate the location of the property on the map in the centrefold

Table 3:
Mineral Production of Operating Mines in the Northwest Territories, 1985, 1986 and 1987 and
Employment, 1987

Company, Mine and Commodity	1985		1986		1987(P)		Number of Employees
	t	kg	t	kg	t	kg	
<i>Canada Tungsten Mining Corporation Limited</i> tungsten trioxide	3 717		1 782		Nil*		Nil
<i>Cominco Ltd.</i> Polaris Mine zinc lead	117 804 39 300		114 000 25 000		131 000 27 000		261
<i>Echo Bay Mines</i> Lupin Mine gold silver		6 069 1 186		6 009 995		6 006 882	467
<i>Giant Yellowknife Mines Ltd.</i> Giant Mine gold silver arsenic trioxide		2 030 568		1 993 767		2 380 ?	396
	2 055		405.5		N/A		
<i>Salmita Mine</i> gold silver		1 981 360		1 529 247		545 114	48
<i>Nanisivik Mines Ltd.</i> zinc lead silver	60 956 5 144		60 241 3 528		57 900 2 500		194
		23 512		25 372		23 000	
<i>Nerco Con Mine Ltd.</i> Con Mine gold silver arsenic trioxide		2 427 633		2 777 574		2 576 622	415
	1.1		Nil		Nil		
<i>Pine Point Mines Ltd.</i> lead	161 379 56 174		238 625 109 815		287 683 114 185		303
<i>Tremanco Resources Ltd.</i> gold silver				72		102.2 10	26
						TOTAL	2 110

Source:
Department of Indian Affairs and Northern Development. These figures are those reported by the mines as production and will not match Statistics Canada's production figure which are based on metals sold or shipped.

N/A: Not available
(P): Preliminary
* Mine closed

Echo Bay Mines Ltd., Lupin Mine

The mill at the Lupin Mine (g) processed 1 686 t of ore per day with an average grade of 10.3 g per t of gold, for an output of 6 006 kg of gold compared with 1 617 t per day averaging 10.7 g per t and an output of 6 009 kg a year earlier. In 1988, the company plans to continue its shaft-deepening program from a depth of 778 m to 945 m.

Type:	Underground
Location:	400 km northeast of Yellowknife
Product:	Gold
Mill Capacity:	1 600 tpd
Tonnes Milled:	616 886 t
Reserves:	3.4 million t (December 31, 1987)
Reserve Grade:	11.38 g/t gold
Employees:	467

Giant Yellowknife Mines Ltd., Giant Mine

The mill at the Giant Mine (c), near Yellowknife, processed 338 655 t of ore averaging 8.09 g of gold per t for an output of 2 379.9 kg of gold compared with 1 993 kg of gold in the prior year from the treatment of 292 167 t of ore. Some 66 per cent of the ore was mined from underground workings and 34 per cent was from open pits.

A pilot plant was built and operated to determine the feasibility of treating old mine tailings for gold recovery. As a consequence, the company decided to construct a \$24.6 million full scale plant and new tailings disposal area. The tailings treatment plant is expected to be operational in mid-1988 and will be capable of producing 1 150 kg of gold per year.

Type:	Underground with small open pits on surface
Location:	2.4 km north of Yellowknife
Product:	Gold
Mill Capacity:	1 000 tpd
Tonnes Milled:	338 655 t
Reserves:	2.35 million t (December 31, 1987)
Reserve Grade:	8.52 g/t gold
Employees:	396

Giant Yellowknife Mines Ltd., Salmita Mine

Salmita Mine (e) production was 2 154 t of ore grading 26.2 g of gold per t for an output of 545.4 kg of gold compared with 63 380 t of ore grading at 25.1 g of gold per t and 1 528.5 kg of gold a year earlier. The mine's reserves were exhausted early in 1987 and the workings were allowed to flood. Over the 3.5 year mine life, total production was 5 595 kg of gold.

A pilot plant bioleach test was undertaken at the Salmita mill site on refractory ore from the Red 24 claim, located a few miles north of the mill. During the summer 473 t of ore grading 25.2 g of gold per t were processed.

Type:	Underground
Location:	256 km northeast of Yellowknife
Product:	Gold
Tonnes Milled:	2 154 t
Mill Capacity:	145 tpd
Reserves:	Nil (December 31, 1987)
Reserve Grade:	None
Employees:	48

Nanisivik Mines Ltd., Nanisivik Mine

Production at Nanisivik (f) in 1987 amounted to 680 000 t of ore grading 9.0 per cent zinc and 0.6 per cent lead and 41 g/t of silver resulting in an output of 57 900 t of zinc (in 103 400 t of concentrate), 2 500 t of lead (in 4 500 t of concentrate) and 23 000 kg of silver. During the Arctic marine navigation season, July to September, five bulk shipments of concentrate were made with most of the concentrates continuing to be shipped to Europe.

Type:	Underground
Location:	27 km east of Arctic Bay, Baffin Island
Product:	Zinc, lead, silver
Mill Capacity:	2 000 tpd
Tonnes Milled:	680 000 t
Reserves:	2.57 million t (December 31, 1987)
Reserve Grade:	10% zinc, 0.3% lead, 45 g/t silver
Employees:	194

Nerco Inc., Con Mine

The Con Mine (c) produced approximately 2 576 kg of gold and 515 kg of silver in 1987. The company is planning to build a new production headframe on the C1-B3 shaft to gain working access to new reserves identified during the year in the C1-B3 mine workings. Reserves were increased by 11 600 kg of gold.

Type:	Underground
Location:	1.4 km south of Yellowknife
Product:	Gold, silver
Mill Capacity:	675 tpd
Tonnes Milled:	Approximately 192 000 t
Reserves:	2.26 million t (December 31, 1987)
Reserve Grade:	10.42 g/t gold
Employees:	415

Pine Point Mines Limited, Pine Point Mine

The mill at the Pine Point Mine (b) processed 3 187 900 t of ore to produce 483 500 t of zinc concentrate (287 683 t of zinc) and 148 100 t of lead concentrate (114 185 t of lead). The zinc concentrate output was a record because of higher average zinc mill-feed grade than in 1986 but lead concentrate output was lower because of lower lead mill feed grade. Mining operations ceased in June 1987 because ore reserves were almost totally exhausted leaving an ore stockpile for mill processing. The mill continued to operate at maximum rates until April 6, 1988, when the ore stockpile was exhausted. Reclamation and abandonment work in the mine area and Pine Point townsite were scheduled for 1988.

Type:	Open pit
Location:	Pine Point
Product:	Zinc, lead
Mill Capacity:	9 100 tpd
Tonnes Milled:	3 187 900 t
Reserves:	750 000 t (Dec. 31, 1987)
Reserve Grade:	10.4% zinc, 3.4% lead
Employees:	303

Tremanco Resources Limited

Tremanco continued to mine from its Tom gold mine and truck the ore to Giant Yellowknife's mill for custom processing. Tremanco purchased the neighbouring Ptarmigan Mine from Cominco Ltd. in July and placed it into production in September. Reserves in the Ptarmigan are estimated at 126 099 t grading 13 g/t gold.

Type:	Underground
Location:	20 km east of Yellowknife
Product:	Gold, silver
Mill Capacity:	Nil
Tonnes Milled:	12 637 t
Reserves:	126 099 t (Dec. 31, 1987)
Reserve Grade:	13 g/t gold
Employees:	26

Development

Giant Yellowknife Mines Ltd. announced that it will spend \$24.6 million to construct a tailings retreatment plant and related facilities to treat 6.3 million t of tailings grading 2.23 g/t of gold at its Giant Mine (c).

Neptune Resources Corp. completed a demonstration leach project on its Colomac Lake gold property (7) by leaching a 1 350 t bulk sample assaying 3.09 g/t of gold. In December, the company announced that it was proceeding to make financial arrangements for a 9 000 tpd open-pit mine and related mill facilities for the mining and processing of 14.5 million t grading 2.2 g/t of gold.

At year end 1987, Noranda Explorations Co. Ltd. and Getty Resources Ltd. announced a two-year, \$33-million underground exploration program designed to confirm the continuity, mineability and economic viability of their Tundra gold deposit (e). The program will entail sinking a 475 m vertical shaft, drifting, underground drilling and raising in ore to obtain bulk samples.

Mineral Exploration

Mineral exploration expenditures in the N.W.T. were estimated at \$65.5 million in 1987 compared with \$45 million in 1986. Most of the increase was attributable to flow-through share financing. Higher metal prices also stimulated investment.

Of 117 exploration projects conducted in the N.W.T. in 1987, 102 were directed to gold; the remainder to platinum, base metals, uranium and rare-earth elements. Exploration expenditures for gold probably exceeded \$56 million with most of the activity, some 98 projects, being concentrated in Slave Province (extending between Great Slave Lake and Coronation Gulf) and in the Archean greenstone belts in Keewatin District. Base metal exploration was confined mainly to areas around producing zinc-lead mines namely the Pine Point, Nanisivik and Polaris mines. Urangesellschaft Canada Ltd. continued work in Keewatin District, where the Kiggavik (formerly Lone Gull) property absorbed most of the exploration expenditures in the N.W.T. for uranium. A number of companies explored for platinum group metals.

Table 4
Claims Recorded in the Northwest Territories,
1986 and 1987

Mining District	1986		1987	
	Number of Claims	Area (hectares)	Number of Claims	Area (hectares)
Mackenzie	449	291 202	120	76 674
Arctic and Hudson Bay	82	69 160	1	627
Nahanni	0	0	0	0
Total	531	360 362	121	77 301

Exploration Projects

Gold Exploration in Slave Province

Courageous Lake Area

The largest gold exploration project was conducted by Noranda Exploration and Getty Resources on the Fat zone on the Tundra property (e) at a cost of more than \$8 million. Deep drilling in 1987 confirmed the presence of ore grade material to vertical depths of as much as 1 460 m. This altered felsic-volcanic shear-zone gold deposit extends over a strike length of 1 450 m. Surface diamond drilling in 1987 amounted to approximately 36 500 m. At year end, possible undiluted geological reserves amounted to 23.9 million t grading 6.17 g/t of gold, including 8.44 million t grading 8.91 g/t of gold. The underground exploration and development program planned for 1988 is described in this report under "Development".

The encouraging results on the Tundra property resulted in 11 other exploration projects on the Courageous Lake volcanic belt, nine of which involved drilling. Bow Valley Industries Ltd. and Hemisphere Development Corp. drilled along a 14-km segment of the belt adjoining the Tundra property and encountered anomalous gold values. Immediately south of the Tundra property (e), Giant Yellowknife Mines Ltd. drilled in the vicinity of the Salmita Mine and on nearby properties. Farther to the south, Bow Valley Industries Ltd. drilled on the BS claims (e) and Highwood Resources Ltd. drilled on the NOD claims.

To the north of the Tundra property (e), drill programs were carried out by Aber Resources Ltd. on the JAX property and by Colray Resources Inc. and Claude Resources on the MIST and BULLY claims. Gunnar Gold Inc. and Mill City Gold Corp. acquired the MOG claim group, adjoining the Tundra property to the northwest, and conducted geological and geophysical surveys. Noranda Exploration Co. Ltd. conducted geophysical surveys on the INKA and BERTHA claims and Goldplex Development Corporation mapped the LAVA claim near Jax Lake.

Indin Lake Area

As the leading project in the Indin Lake area, Neptune Resources Corp. completed 125 diamond drill holes totalling 9 725 m on its Colomac and Goldcrest claim groups (7). The \$5.5 million program included drilling, mining of a 36 000 t bulk sample and processing 3 500 t of crushed material in a demonstration open vat leach facility. The company's plan to develop the property is described in this report under "Development".

Echo Bay Mines Ltd. completed two exploration projects in the Indin Lake area (7) on properties held in joint venture with Comaplex Resources International Ltd. and Petromet Resources Ltd. Drilling on the KIM claims focused on the Cass gold zone. At the north end of Indin Lake, joint ventures partners, Mahogany Resources Inc. and Treasure Island Resources Corporation drilled the Spider Lake property (7). Other projects in the Indin Lake area were drilled by Tanqueray Exploration, Comaplex Resources and Stratabound Minerals Corporation.

Yellowknife Volcanic Belt

At the north end of the belt (7), on the Clan Lake area, Canamax Resources Inc. drilled the NOSE claims and Noranda Exploration Co. Ltd. explored the BOSS and BELL claims. Also, Troymin Resources Ltd., in joint venture with Coronado Resources, drilled 1 300 m on the MON and DIS claims.

In the Yellowknife area (c), Giant Yellowknife Mines Ltd. completed over 3 000 m of surface drilling on its leases. To the south of Yellowknife, Golden Marlin Mines Ltd. continued ice-platform drilling to test indicated shear zones under the waters of Yellowknife Bay.

Russell-Slemon Lake Area

Aber Resources Ltd., in joint venture with Freeport McMoRan Gold, continued drilling on the BUGOW property in the Russell Lake area (6). Aber Resources also drilled on the SP claims and on a claim at Lajeunesse Bay. Canamax Resources Inc. drilled on a property at Mosher Lake (6) that was optioned from Roxwell Gold Mines. Noranda Exploration Co. Ltd. drilled the LEMON group.

Other Projects in Southern Slave Province

Aber Resources and Hemisphere Development, in joint venture, reported that a 15-hole, 1 542-m drill program on their Sunrise Lake property (11), had outlined a zinc-lead-silver-gold deposit. Tanqueray Resources Ltd. drilled over 300 m on the AP-45 claim at Murphy Lake (9), in the Cameron Volcanic Belt. Terra Mines Ltd. demobilized its test mill equipment on its Bullmoose property (10) and drilled 1 200 m on the WOLF claims at Spencer Lake (11).

Northern Slave Province

Aurun Mines drilled on its COM 1 and 2 claim blocks near Contwoyto Lake (g). The Back River Joint Venture conducted an extensive drilling program on the BRAU claims (18) and several prospecting permits between the Western River area and Beechey Lake. Bow River Industries Ltd., the operator of the Contwoyto Project, drilled on the BARB 1, AU 7, FIN and PIXIE claims. A high-grade gold intersection in one drill hole was reported.

Consort Energy Ltd. in joint venture with Western Canadian Mining Corporation, drilled on the WEST claim near the Lupin Mine (g).

Cominco Ltd., in joint venture with Cogema Ltée, drilled a newly discovered gold deposit on the AU 23, 24 claim block (14) optioned from the Contwoyto Syndicate. Three drill holes each penetrated several meters of sulphide-bearing iron formation grading 12 to 40 g/t of gold. South of Hood River, Cominco Ltd. drilled the property comprised of the SGJV and VER claims and Prospecting Permit 1031 (20).

Near Contwoyto Lake, Echo Bay Mines Ltd. drilled on the Lupin Mine area (g) and the CAR 9 claim at Concession Lake. Echo Bay Mines also drilled on the DOUGHALL claim in the Wilberforce Basin (23) and on the CUB 1 and RUSH 5 claims, both near Itchen Lake (15).

Giant Yellowknife Mines Ltd. drilled on the JOYCE, TANIA, PATRICIA claim block near the Lupin Mine (g). Hecla Mining Company of Canada drilled on the JOHN, SHIN and DLER claim group, namely on the northeastern side of Contwoyto Lake (g).

Orofino Resources and Dore-Nebraska Resources Inc. performed a small amount of drilling on the Canuc Resources Ltd. property, south of Arcadia Bay (22), Coronation Gulf.

Silver Hart Mines Ltd. drilled the Farney and G zones on the FARN and KNUT claims (21) in the Wilberforce Basin area. Eleven holes were completed on the TURNER, TURN claim block at Turner Lake (21), where five holes yielded intersections with gold assays.

Sirius Energy Corporation drilled six holes on the FIRE claims near Regan and Fiddler Lakes (17). Parklane Technologies Inc., in a joint venture with Highwood Resources Ltd., conducted geophysical and geochemical surveys on the ROX and VOX claims south of Contwoyto Lake (g) and drilled five holes on the NOD claims. Utah Mines Ltd. conducted geophysical surveys on the TROY claims (g), near the north end of Contwoyto Lake.

Bathurst Block

Abermin Corporation trenched the Wombat zone at Roberts Lake (24), where high-grade, gold-bearing quartz veins were sampled.

Silver Hart Mines Ltd. drilled 1 800 m on the Warner property at Kathleen Lake (23) under an option agreement with Bear Creek Hills Estates Ltd.

Echo Bay Mines drilled three holes on the NEST claims (23) south of Gambit Lake, seven holes on the Bear 2, 3 claims (23), east of Gordon Lake and two holes on the adjacent BC 1 and 2 claims optioned from Bear Creek Hills Estates Ltd. The twelve holes totalled 815 m.

Chevron Canada Resources Limited and Galveston Resources Ltd. conducted an airborne EM survey over the LB claims east of Gordon Bay (23).

Gold Exploration in District of Keewatin

Gold exploration was confined to the Rankin-Ennadai Volcanic Belt extending between Rankin Inlet (40) and Ennadai Lake (26) and in the Yathkyed Lake area (36).

Abermin Corporation Ltd. conducted a geochemical survey, a VLF-EM survey, trenching and mapping on its SUND OG (27) property northeast of Cullaton Lake.

Sunmist Energy '86 Inc. conducted an airborne EM survey and till sampling survey on the SUNNY and MISTY claims (28) west of Maguse Lake. The Erick Lake gold property in the same area was tested by drilling.

In the Happotiyik Lake area (30), Noble Peak Resources conducted airborne and ground geophysical surveys and drilled on the HAPPY and NORM claims and prospecting permits optioned from Borealis Exploration Ltd.

Borealis Exploration Ltd. mapped, prospected and sampled on prospecting permits in the Ferguson River (41) area and Kaminak Lake area (29) and claims at Pistol Bay (31). The company drilled 1 270 m on the SUSAN claims near Fat Lake (31) before going underground to obtain a 3 000 t bulk sample. A 100 tpd test mill began operations at the end of November, 1987, to test the material. The mill operated for two days.

Canadian Nickel Co. Ltd. conducted geophysical surveys and sampling on the Igloo Project in the Wilson Bay area (31) and two gold showings were tested by drilling.

In the Yathkyed Lake area, Homestake Mineral Development Co. Ltd. conducted geophysical surveys on the SY claims (36) and adjoining prospecting permits. Several gold showings were drilled.

Joint venture partners Asamera Minerals Inc. and Comaplex Resources International Ltd. explored properties in the Baker Lake area and conducted work on permits and claims at Parker Lake (32), Whitehills Lake (34) and the Meadowbank-Tehek Project area (35). Several areas were surveyed by airborne EM and over 1 980 m of drilling were completed on the Phoenix zone, at the south end of the Baker Lake property. On the Parker Lake project, the best results were reported from one drill hole located south of Baker Lake.

Giant Yellowknife Mines Ltd. conducted an airborne EM survey over the SAM claims north of Phoenix Lake (33) and also conducted mapping and sampling.

Gold Exploration in Other Regions of the N.W.T.

On the East Arm of Great Slave Lake, Rupperee Resources Ltd. concluded an airborne EM survey over its Outpost Island claims (8). West of Wrigley, Giant Yellowknife Mines Ltd. drilled gold showings on the GRUMP claim (5).

Platinum Group Metals

Equinox Resources Ltd. conducted geochemical sampling, diamond drilling and trenching on the VAL and SPEE claims (46) covering the Muskox Intrusion. Forty-six holes were drilled for a total of 3 171 m. The company reported high-grade platinum group metal assays in two drill holes.

In District of Keewatin, Asamera Minerals Inc. and Comaplex Resources International Ltd., in a joint venture, carried out geological mapping, magnetic and EM surveys on claims encompassing the former North Rankin Nickel Mine (40). A drill program is planned for 1988 to test platinum-group-element target areas.

Borealis Exploration Ltd. staked claims in the Rankin Inlet area (40) to explore for platinum group metals associated with ultramafic and gabbro sills in the area.

Homestake Mineral Development Co. Ltd. mapped and sampled claims and prospecting permits in the Ferguson Lake area (41), where Inco Ltd. delineated a copper-nickel deposit during the 1950s.

South of Great Slave Lake, Trigg, Wollett Olson Consulting Ltd. managed a 1 400 m drill program on Enxco International Ltd.'s Rutledge Lake claims (43). Surface showings of anomalous nickel, copper, platinum and/or gold and airborne EM conductors were tested at depth.

Highwood Resources Ltd. sampled the Caribou Lake Gabbro, which forms part of the Blatchford Lake Complex (44).

Uranium

On the northeast margin of the Thelon Basin, in the District of Keewatin, Urangesellschaft Canada Ltd. drilled on its Kiggavik property (formerly Lone Gull property) (1). Mineable reserves total 18 300 t of U_3O_8 at an average grade of 0.6 per cent U_3O_8 (or 0.5% diluted) in two zones. At least two other zones have been partly explored and airborne geophysical targets south of the Kiggavik deposit were tested by ground surveys and drilling.

South of Schultz Lake (1), PNC Exploration Co. Ltd. explored the F claims, optioned from BP-Selco Ltd. A number of potential drill targets were identified by geophysical surveys combined with geological analysis.

Southeast and east of Great Bear Lake, CEGB Exploration Canada Ltd. explored for uranium on Prospecting Permits 1098, 1099 in the Longtom Lake and Zebulon Lake area (4). The company also performed surveys in the Echo Bay, Contact Lake and McLeod Lake area (3) on the CROSS, BULLY and BULLWINKLE claims.

Base Metals

Pine Point Mines Ltd. conducted a \$2-million exploration program consisting mainly of IP surveys and surface drilling on its mine property (b). The program did not find new ore reserves to supply the company's mill.

Equinox Resources Ltd. explored for sphalerite (zinc sulphide) deposits enriched in gallium and germanium on claims near Wrigley (38) and on its prospecting permit west of Wrigley in the Mackenzie Mountains (39).

Cominco Ltd. conducted surface drilling in an effort to outline new reserves on its Polaris zinc-lead mine property (d).

Nanisivik Mines Ltd. surface drilled geophysical anomalies on its Nanisivik Mine property (f) in an effort to expand ore reserves. Underground drilling in the lower lens of the mine deposit proved additional reserves that were formerly categorized as probable.

Table 5
Exploration - Northwest Territories

Location (1)	Company (2)	Property/Area (3)	Mineralization (4)
1	Urangesellschaft	Kiggavik	U
1	PNC Exploration	Schultz Lake	U
2		Nonacho Lake	U
3	CEGB Exploration	Echo Bay	U
4	CEGB Exploration	Hottah Lake	U
5	Giant Yellowknife	GRUMP	Au
6	Aber/Freeport McMoRan	BUGOW	Au
6	Aber	Russell Lake	Au
6	Aber	Lajeunesse Bay	Au
6	Aber	Mosher Lake	Au
6	Canamax	Mosher Lake	Au
6	Noranda	Russell Lake	Au
6	Hemisphere	Russell Lake	Au
6	Viscount	Russell Lake	Au
6	Asamera/Kelmet	Russell Lake	Au
6	Prolific Petroleum	Russell Lake	Au
7	Neptune	COLOMAC	Au
7	Echo Bay/Petromet/ Comaplex	KIM	Au
7	Echo Bay/Petromet/ Comaplex	SPAN	Au
7	Mahogany/Treasure Island	Spider Lake	Au
7	Tanqueray	Indin Lake	Au
7	Comaplex	Indin Lake	Au
8	Rapparee	Outpost Island	Au, W
9	Blackridge/Cruiser	Gordon Lake	Au
9	Canamax	Discovery Mine	Au
9	Candorado	Gordon Lake	Au
9	Giant Bay	Gordon Lake	Au
9	Lightning Minerals	Dome Lake	Au
9	Westfort/Cameron	Myrt Lake	Au
9	Tremingo	GAB	Au
9	Utah Mines	Fenton Lake	Au
9	Tanqueray	Murphy Lake	Au
10	Terra	Bullmoose Lake	Au
10	Noranda	Weaver Lake	Au
10	Viscount	Hidden Lake	Au
10	Ardic	Thompson-Lundmark Mine	Au
11	Highwood/Hemisphere	Sunset Lake	Au
11	Terra	Spenser Lake	Au
11	Giant Yellowknife	Bridge Lake	Au
12	Utah Mines	Indian Mountain Lake	Au
12	Giant Yellowknife/ Kelmet/Asamera	Indian Mountain Lake	Au

Table 5 (Continued)
Exploration - Northwest Territories

Location (1)	Company (2)	Property/Area (3)	Mineralization (4)
13	Gunnar/Mill City	Winter Lake	Au
13	Doelcam	WIN, TER	Au
14	Cominco/Cogema	AU 23, 24	Au
15	Echo Bay	Itchen Lake	Au
15	Echo Bay	Leanne Lake	Au
15	Utah Mines	MIRAGE	Au
16	Echo Bay	Redrock Lake	Au
17	Sirius Energy	Regan Lake	Au
17	Utah Mines	ROYAL	Au
18	Back River JV	Beechey Lake	Au
19	Asamera/Kelmet	Amoeba Lake	Au
20	Cominco	SGJV, VER	Au
21	Silver Hart	FARN, KNUT	Au
21	Silver Hart	Turner Lake	Au
22	Orofino	ARCADIA	Au
23	Echo Bay	DOUGHAL	Au
23	Silver Hart	WARNER	Au
23	Echo Bay	Gambit Lake	Au
23	Echo Bay	Hiukitak River	Au
23	Chevron/Galveston	Gordon Bay	Au
23	Anderson and Kizan		Au
23	Bear Creek Hills	Hiukitak River	Au
24	Abermin	Hope Bay	Au
25	J.S. Kermeen	McLintock Lake	Au
26	Comaplex	Rochon Lake	Au
27	Abermin	SUNDOG	Au
28	Sunmist Energy	Maguse Lake	Au
29	Dejour/Noble Peak	Turquetil Lake	Au
29	Borealis	Kaminak Lake	Au
30	Noble Peak	Happotiyik Lake	Au
31	Borealis	Fat Lake	Au
31	Canadian Nickel	Wilson Bay	Au
31	Faraway Gold	Whale Cove	Au
32	Asamera/Comaplex	Parker Lake	Au
33	Asamera/Comaplex	Phoenix Lake	Au
33	Giant Yellowknife	SAM	Au
34	Asamera/Comaplex	Whitehills Lake	Au
35	Asamera/Comaplex	Tehek	Au
36	Homestake	Yathkyed Lake	Au
37	Highwood	Blanchet Island	Co
38	Equinox	Wrigley	Zn, Ga, Gr
39	Equinox		Zn, Ga, Gr
40	Borealis	Rankin Inlet	Pt, Cu, Ni
40	Asamera/Comaplex	Rankin Inlet	Pt, Cu, Ni

Table 5 (Continued)
Exploration - Northwest Territories

Location (1)	Company (2)	Property/Area (3)	Mineralization (4)
41	Homestake	Ferguson Lake	Pt, Cu, Ni
41	Borealis	Ferguson Lake	Au
42	Anderson and Kizan	Thoa Lake	Cu, Ni
42	Anderson and Kizan	Opascal Lake	Cu, Ni
43	Enexco	Rutledge Lake	Pt, Cu, Ni
44	Highwood/Hecla	Thor Lake	Be
44	Highwood	Caribou Lake	Pt
45	J.W. Price	Conway Lake	
46	Equinox	Muskox	Pt, Cu, Ni
b	Pine Point	Pine Point	Pb, Zn
c	Canamax	Clan Lake	Au
c	Noranda	BOSS	Au
c	Troymin/Coronado	MON, DIS	Au
c	Kelmet	Walsh Lake	Au
c	Nerco-Con	Con Mine	Au
c	Giant Yellowknife	Giant Mine	Au
c	Golden Marlin	Yellowknife Bay	Au
d	Cominco	POLARIS	Pb, Zn
e	Noranda/Getty	FAT (Tundra)	Au
e	Bow Valley/Hemisphere	Courageous Lake	Au
e	Giant Yellowknife		Au
e	Bow Valley	BS	Au
e	Parklane/Highwood	NOD	Au
e	Aber	JAX	Au
e	Colray/Claude Resources	MIST, BULLY	Au
e	Gunnar/Mill City		Au
f	Nanisivik	Nanisivik Mine	Pb, Zn
g	Parklane/Highwood	ROX, VOX	Au
g	Utah Mines	TROY, RISK	Au
g	Aurun	Contwoyto Lake	Au
g	Bow Valley	Contwoyto Lake	Au
g	Consort/Western Canadian	WEST	Au
g	Echo Bay	CAR 9	Au
g	Hecla	JOHN, SHIN, DLER	Au
g	Giant Yellowknife	JOYCE, TANIA, PATRICIA	Au

Footnotes for Tables 5 and 6

(1) Table location is made with reference to corresponding numbers on Yukon and Northwest Territories maps. Locations are approximate.

(2) Abbreviated name of the Company is used: Expl. (Exploration), Ltd./Ltée (Limited), JV (Joint Venture).

(3) Geographical areas are indicated by small print, whereas claims and groups are capitalized. Abbreviated words are: Peninsula (Pen), River (R), Lake (L).

(4) Metal(s) of primary importance defined by chemical symbols: copper (Cu), gold (Au), lead (Pb), tantalum (Ta), lithium (Li), asbestos (Asb), molybdenum (Mo), silver (Ag), barium (Ba), cobalt (Co), tin (Sn), iron (Fe), tungsten (W), niobium (Nb), beryllium (Be), rare earth elements (REE), mercury (Hg), antimony (Sb), uranium (U), fluorite (F), gallium (Ga) and germanium (Gr).

Table 6
Exploration - Yukon

Location (1)	Company (2)	Property/Area (3)	Mineralization (4)
1		Fortymile River	Placer Au
2	Eldorado Placers	Sixtymile River	Placer Au
2	Klondike Underground	Miller Creek	Placer Au
2	ESSO	SIXTYMILE	Au, Ag
3	White Channel Underground	Klondike	Placer Au
3	Granville JV	Gold Run Creek	Placer Au
3	Cominco	BRONSON	Au, Cu, Pb
3	Dawson Eldorado	LONE STAR	Au
3	Volcano Resources	KEY	Au
4	All North	LAW	Au
4	United Keno Hill	HUN, KIN	Au
5	Queenstake	Clear Creek	Placer Au
6	Silverquest	QUEST	Au, Ag, Pb, Zn
7	NDU Resources	CLARK	Ag, Pb, Zn
8	Silverquest	PIKE	Au
9	Moosehorn	REEF	Au
10	Noranda	TAD	Au, Ag, Pb, Zn
11	Nordac/Rexford	FIELD	Au
12	Nordac/Rexford	NUCLEUS, REVENUE	Au, Cu
12	Nordac/Rexford	STODDART, GOLDSTAR	Au, Ag
12	Noranda	ELEPHANT, DART	Au, Ag
12	Nordac/Rexford	ANTONIUK	Au
12		Big Creek	Placer Au
13		Nansen Creek	Placer Au
13	Nordac/Rexford	TOAST	Au
13	Chesbar/States	VIC	Au
13	Aurchem	GOULTER	Au, Ag
13	Chevron	Mt. Nansen	Au, Ag
13	Chevron	RUSK, TAWA	Au, Ag, Pb
14	Kerr Addison	MAG	Au
15	United Keno Hill	RUBY	Au
15	Silverquest	SHUT	Au, As
16		Burwash	Placer Au
16	United Keno Hill	DWA	Au
16	Silverquest	DONJEK	Cu
16	Pak-Man/Rockridge	AIRWAYS	Pt, Cu, Ni
17	Noranda	SEMENOF	Au, Cu
18	Noranda/Golden Nevada	Grew Creek	Au, Ag
19		Livingstone Creek	Placer Au
20	Aurich	LOON	Au, Cu
20	United Keno Hill	CAP	Au
21	Whitehorse Copper	BONZO, GEM	Au, Cu
22	All North	WAS, TOO	Au
23	Fairfield	RAM	Au
23	Canamax	BOBBY	Au, Ag
23	Cominco/Cinnabar	TAY	Au, Cu
23	Curragh	MM	Ag, Pb, Zn, Cu
24	Canamax	Ketza River	Au, Ag

Table 6 (Continued)
Exploration - Yukon

Location (1)	Company (2)	Property/Area (3)	Mineralization (4)
24	Golden Pavilion	SONNY	Au
24	Mountain Province	WHITE	Au, Ag, Pb
24	Canamax	Mt. Misery	Au, Ag
24	Canamax	SHARON, QUILL, HOEY, SLIDE LAKE	Ag, Pb, Au
25	Noranda	TES	Au
26	Silver Hart	MIDNIGHT (CMC)	Ag, Pb
27	Pak-Man/2001 Resources	LIZ	Ag, Pb, Zn
27	Goldex	LUCK	Ag, Pb
28	Fairfield	LOGAN	Ag, Zn
29	Tarmachan	MOLLY	Au, Mo
30	Canamax	HUNDERE	Ag, Zn, Pb
31	Novamin/NDU Resources	PORKER	Au, Zn
32	Novamin	MEL	Pb, Zn, Ba
33	All North/Chevron	REX	Pt
34	Rockridge	DUKE	Pt, Ni, Cu
35	All North	WELLGREEN	Pt, Ni, Cu
35	Rockridge/2001 Resources	LINDA	Pt, Ni, Cu
35	Silverquest	WASH	Pt, Ni, Cu
35		REED	Pt
36	Rockridge/All North	CANALASK	Pt, Ni, Cu
36	Silverquest	CATS & DOGS	Pt, Ni, Cu
37	Cody Hawk	O'BRIEN	Au
38	United Keno Hill	RIGEL	Au, Ag
38	Omni	COLLEGE GREEN	Au, Ag
38	All North	BEN	Au, Ag
a		Mayo	Placer Au
a	United Keno Hill	Keno Hill	Ag, Pb, Zn
a	Orex	MT. HINTON	Ag, Au
d	Mt. Skukum	MT. SKUKUM	Au, Ag
d	Mine Quest	PART, AUL	Au, Ag, Pb
d	Kerr Addison	BUG, BOUDETTE	Au
d	Omni	SCAR	Au, Ag
d	Omni	MT. REID	Au, Ag
d	Pacific Trans-Ocean	GLENLIVET	Au, Ag, Pb, F
d	All North	MAC	Au, Ag
d	Berglynn/Skukum Ventures	MT. STEVENS	Au, Ag
d	Pacific Trans-Ocean	EARL, SAID	Au, Ag
d	All North	SON	Au

Table 7
Mineral Production - 1978-1987

Yukon Territory		1978	1979	1980	1981	1982	1983	1984	1985	1986(R)	1987(P)
Mineral											
Gold	\$ kg	8 518 731 1 202	13 749 271 1 190	63 029 000 2 982	66 382 000 3 746	39 721 000 2 656	50 337 000 3 006	44 419 000 2 960	42 689 000 3 065	58 237 000 3 547	97 186 000 5 106
Silver	\$ kg	28 462 559 143 459	54 218 064 129 982	114 120 000 147 000	32 339 000 80 000	29 943 000 95 000	6 891 000 15 000	18 825 000 54 000	13 098 000 47 000	18 468 000 73 000	39 735 000 133 000
Lead	\$ kg	64 322 403 79 233 298	103 374 279 78 250 062	71 558 000 65 771 000	54 935 000 55 970 000	25 733 000 35 493 000	307 000 520 000	1 539 000 2 083 000	848 000 1 470 000	23 893 000 35 091 000	105 982 000 100 267 000
Copper	\$ kg	16 474 354 10 018 826	18 422 058 7 778 231	27 082 000 10 433 000	20 123 000 9 094 000	14 654 000 7 510 000	3 977 000 1 904 000		19 000 10 000	13 000 6 000	22 000 9 000
Zinc	\$ kg	74 076 827 96 673 141	109 460 866 113 572 783	88 313 000 90 938 000	94 237 000 78 806 000	58 519 000 54 537 000	31 000 27 000	244 000 173 000	137 000 109 000	61 521 000 50 634 000	196 806 000 154 479 000
Bismuth	\$ kg							2 000 162	11 000 1 000	5 000 541	7 000 660
Cadmium	\$ kg	355 58					6 000 2 000	9 000 2 000	5 000 1 000	8 000 2 000	26 000 5 000
Asbestos	\$ t	26 948 800 53 255									
Sand and Gravel	\$ t					550 000 463 000	1 438 000 480 000	5 105 000 3 074 000	2 995 000 1 185 000	13 355 000 4 902 000	6 960 000 2 400 000
Sulphur (smelter gas)	\$ t								267 000 2 000	1 000 7	
Coal (E)	\$ t	318 000 16 578	363 000 23 003	287 000 16 529	368 000 20 860					209 000 17 233	245 000 20 000
TOTAL	\$	218 804 029	299 244 538	364 389 000	268 016 000	169 120 000	62 987 000	70 143 000	60 069 000	176 310 000	447 449 000

Source: Mineral Policy Sector, Energy, Mines and Resources Canada and Natural Resources and Economic Development, Indian Affairs and Northern Development.
(P) Preliminary Figures, (R) Revised Figures, (E) Estimated

Table 8
Mineral Production - 1978-1987

Northwest Territories		1978	1979	1980	1981	1982	1983	1984	1985	1986(R)	1987(P)
Mineral											
Gold	\$	45 769 718	61 868 488	96 920 000	85 495 000	91 415 000	144 570 000	191 071 000	177 079 000	205 266 000	224 797 000
	kg	6 459	5 356	4 209	4 825	6 113	8 634	12 732	12 713	12 503	11 810
Silver	\$	23 854 173	34 770 651	41 331 000	13 456 000	16 073 000	33 743 000	20 361 000	9 083 000	5 478 000	3 827 000
	kg	120 237	83 358	53 000	33 000	51 000	74 000	59 000	33 000	22 000	13 000
Copper	\$	518 993	941 732	679 000	613 000	419 000	214 000	130 000	46 000	1 000	1 000
	kg	315 624	397 191	262 000	277 000	215 000	102 000	69 000	23 000	1 000	1 000
Lead	\$	56 898 673	80 117 935	55 853 000	44 680 000	46 367 000	47 901 000	66 647 000	44 489 000	91 129 000	142 166 000
	kg	70 088 814	60 645 969	51 337 000	45 522 000	63 955 000	81 161 000	90 198 000	77 083 000	133 836 000	134 499 000
Zinc	\$	143 911 352	205 600 051	172 556 000	159 764 000	229 110 000	269 951 000	386 813 000	356 415 000	322 064 000	417 429 000
	kg	187 809 913	213 323 454	175 685 000	133 604 000	213 523 000	234 883 000	274 920 000	284 223 000	265 073 000	327 653 000
Cadmium	\$						10 000	1 034 000	866 000	670 000	912 000
	kg						3 000	214 000	238 000	175 000	160 000
Bismuth	\$						163 000	34 000	60 000		2 000
	kg						32 000	3 000	3 000		189
Tungsten Trioxide (E)	\$	47 310 800	52 924 000	67 646 000	43 363 000	38 353 000	11 221 000	33 584 000	38 918 000	17 363 000	
	kg	2 885 619	3 254 067	4 007 000	2 515 000	2 925 000	1 126 000	3 112 000	3 529 000	2 470 000	
Arsenic Trioxide (E)	\$				561 000	3 862 000	2 345 000	5 837 000	1 969 000	254 000	370 000
	t				1 094	1 780	982	4 684	4 098	406	
Sulphur (smelter gas)	\$								11 665 000	21 788 000	15 379 000
	t								98 000	147 000	100 000
Sand and Gravel	\$					41 482 000	32 479 000	36 323 000	8 981 000	3 281 000	4 225 000
	t					6 625 000	5 905 000	7 249 000	6 803 000	986 000	1 300 000
Stone	\$					1 268 000	14 601 000	4 617 000	434 000	1 011 000	810 000
	t					323 000	2 409 000	729 000	163 000	368 000	340 000
TOTAL	\$	318 262 909	436 222 857	434 985 000	347 841 000	468 349 000	557 198 000	746 451 000	649 732 000	668 452 000	810 005 000

Source: Mineral Policy Sector, Energy, Mines and Resources Canada and Natural Resources and Economic Development, Indian Affairs and Northern Development.
(P) Preliminary Figures, (R) Revised Figures, (E) Estimated